FAPA Panel Discussion on Water Supply Workplans

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Background

- The 2002 Legislature expanded the local government comprehensive plan requirements to strengthen coordination of water supply planning and local land use plans. (*s.163.3177 Florida Statutes*).
- Palm Beach County was selected as one of five pilot projects to develop templates to assist other communities with compliance.

New Planning Requirements

- Coordinate regional water supply plans with water management district for at least a 10-year planning period
- Revise Potable Water sub-element
- Revise Conservation Element
- Revise Intergovernmental Coordination Element
- Adopt 20-Year Water Supply Work Plan with Evaluation and Appraisal Report

Scope of Work Plan

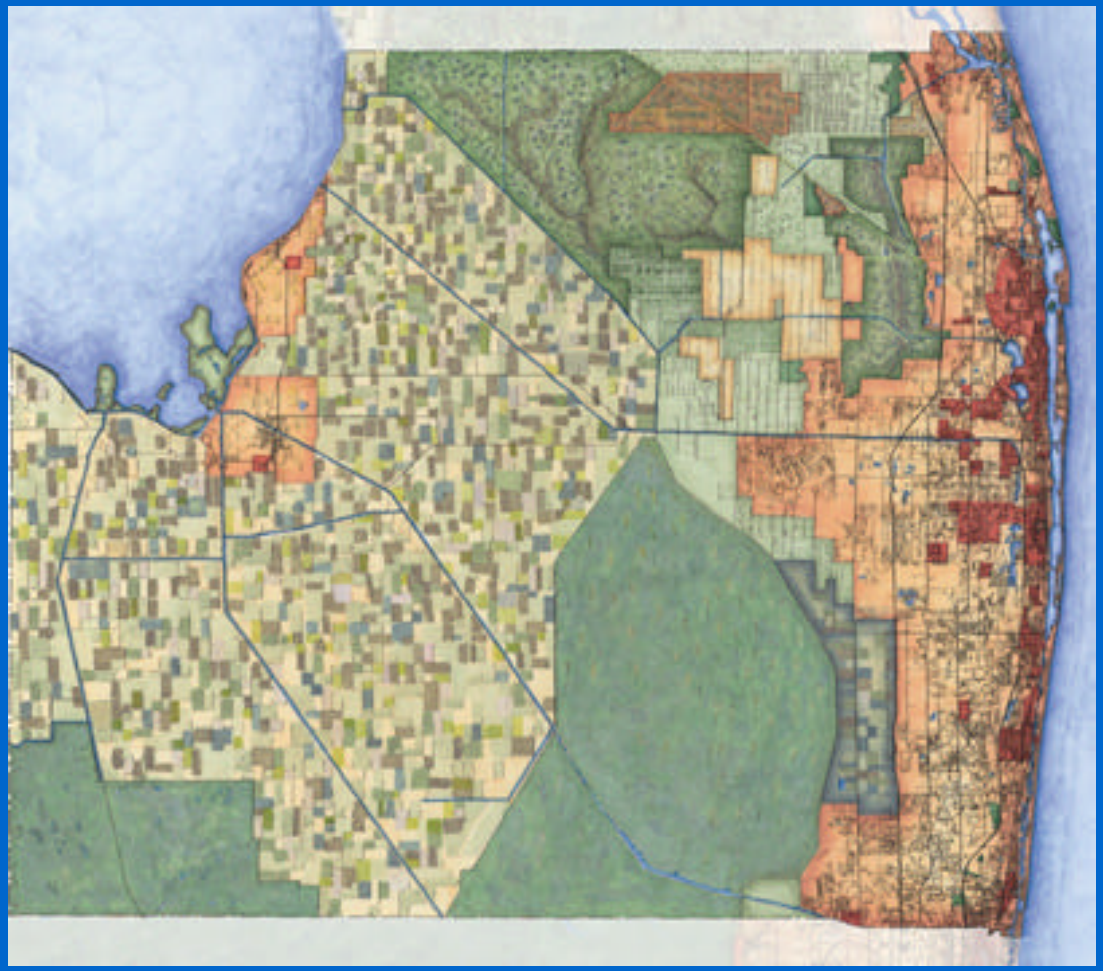
- **Inventory**: Provide GIS maps in ArcView format depicting major facilities and service areas and tables of facility and permit data.
- **Facility Capacity Analysis**: Service area tables showing five and 10-year capacity, demand, surpluses and deficiencies, needed facilities, and sources of water.
- **Comprehensive Plan Amendments**: Compile material into a draft amendment format.

Inventory

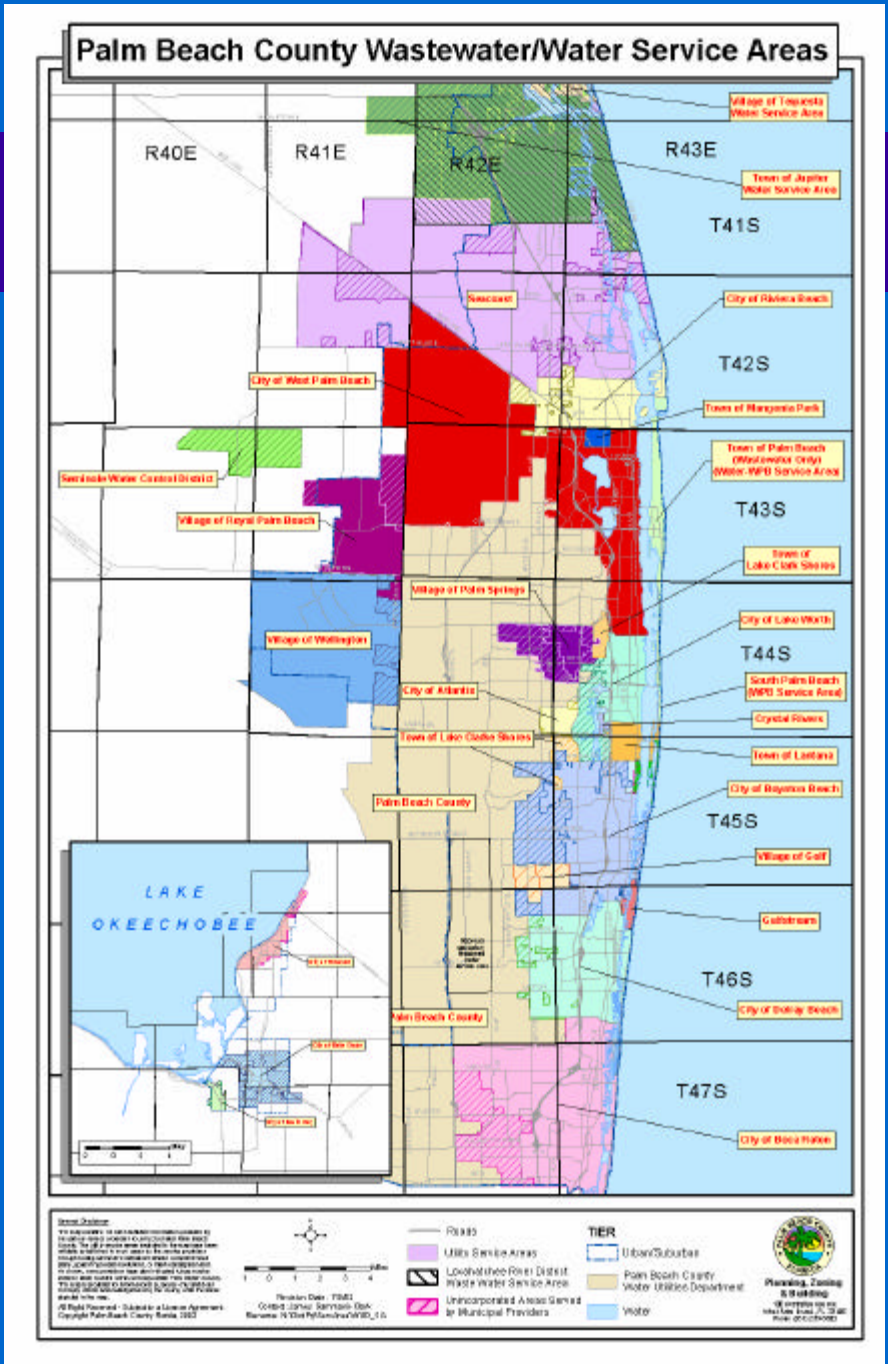
- Maps of layers depicting all existing facilities, service areas including a mandatory reclaimed water service area, and aquifer protection overlays.
- Overview of the hydrogeology settings, water sources, and the current water supply situation in the County.
- Summary of Alternative Water Resources Program and Capital Expansion Program for existing wellfields.
- Permits: SFWMD Water Use, PBC Health Dept., and FDEP Facility Operating Permits.

County Location In State

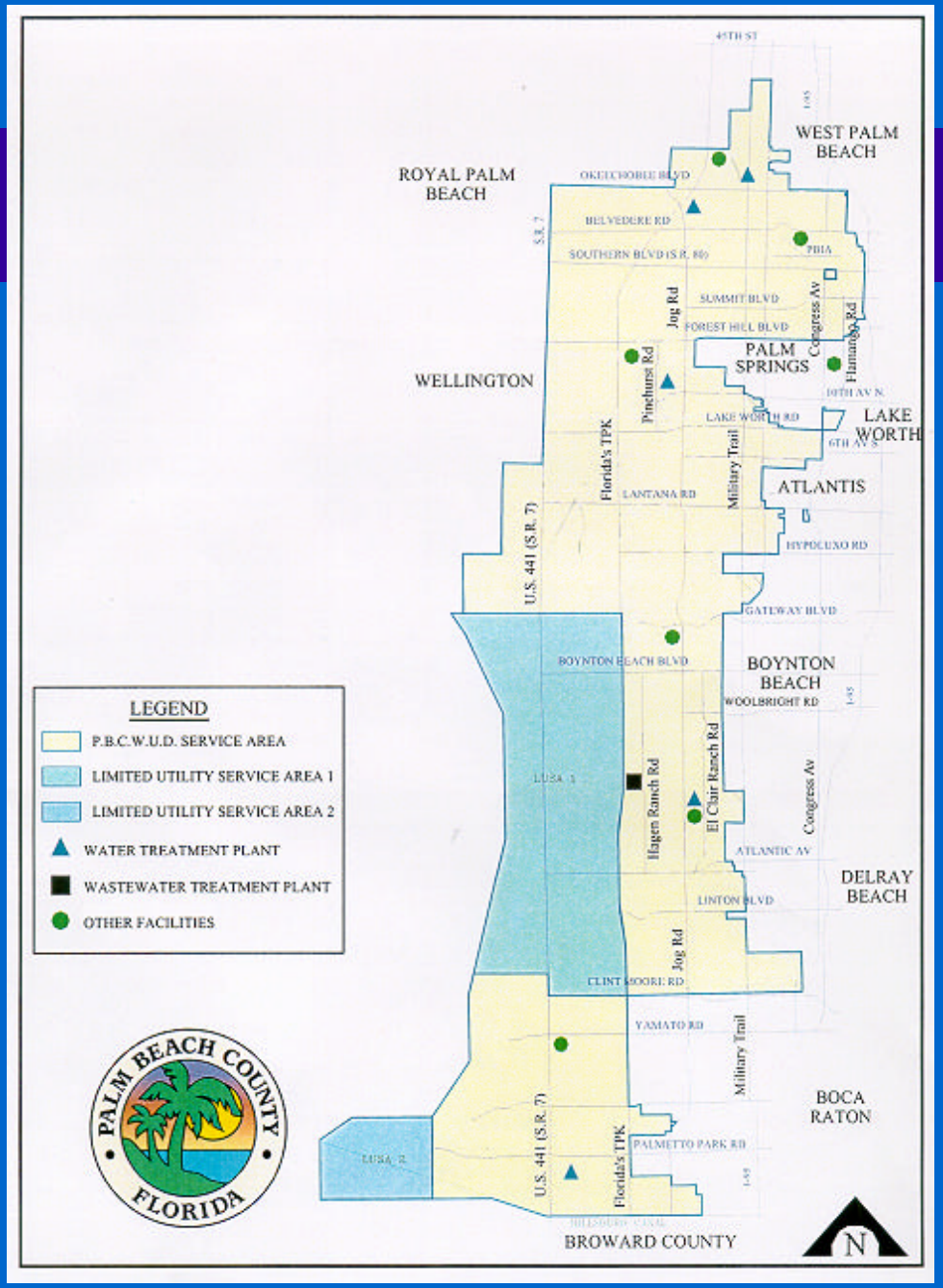
Water Supply/Planning in Palm Beach County



Multiple Utility Providers



Palm Beach County Utilities Service Area & Main Facilities



Facility Capacity Analysis

- Existing Conditions & Utilized Sources
- 5-Year Conditions & Projected Demand
- 10-Year Conditions & Projected Demand
- Water Supply Facilities Needed for 10 years
- Verification of Sufficient Supply of Water

Water Supply Workplan

- Determine Water Supply Facility Needs for the Next 20 Years
- Verify Sufficient Water Supply Availability and Impact on the Regional System
- Develop Detailed Action Plan to Balance Water Supply and Environmental/CERP Needs and Objectives

Water Supply Facility Needs

Wellfield		2005 Wellfield Capacity (MGD)	2010 Wellfield Capacity (MGD)	2015 Wellfield Capacity (MGD)	2020 Wellfield Capacity (MGD)	2025 Wellfield Capacity (MGD)	2025 Total Wellfield Capacity
2W	Eastern Wellfield	8.4	8.4	14.1	14.1	14.1	
2W	Western Wellfield	10.1	10.1	16.6	16.6	16.6	
2W	Northern Wellfield	0	0	15.1	15.1	15.1	45.8
3W	Eastern Wellfield	18.4	18.4	18.4	18.4	18.4	
3W	Western Wellfield	26.9	26.9	26.9	26.9	26.9	
3W	Northern Wellfield	0	0	0	0	0	45.3
8W	Northern Wellfield	10.1	11.5	11.5	15.8	15.8	
8W	Central Wellfield	8.6	8.6	8.6	8.6	8.6	
8W	Southern Wellfield	3.6	6.5	6.5	12.2	12.2	36.6
9W	Eastern Wellfield	22.1	22.1	22.1	22.1	22.1	
9W	Western Wellfield	17.5	17.5	17.5	17.5	17.5	39.6
RW Pumping Capacity		125.6	129.9	157.3	167.4	167.4	167.4
Total FW Capacity		87.5	91.5	107	111	111	
RW Required for FW		101.3	105.5	126.6	134.7	134.7	
% RW Redundancy		19.30%	18.80%	19.50%	19.50%	19.50%	

Verification of Sufficient Water Supply

Palm Beach County and the SFWMD developed a water supply strategy that will:

- Ensure infrastructure is expanded properly to accompany growth and protect the environment.
- Ensure adequate capital financing is in-place.
- Minimize application time and expense so that the focus is on plan implementation.

Water Supply Development Plan - Approach

- Determine Projected Demands
- Establish Baseline of Regional Water Levels
- Establish Baseline of Current Allocation
- Model Predicted Groundwater Elevations
- Conduct a Water Balance of Regional System
- Determine Alternative Supply Requirements

Water Supply Development Plan - Results

- Regional System pertaining to PBC use includes WCA-1, C-51 Canal, Hillsboro Canal, and Lake Okeechobee.
- Proposed 20-year use will not lower coastal canal stages and is consistent with Biscayne Aquifer minimum flows and levels (MFL) Prevention Plan.
- Area of wellfield influence does not extend to coastal saline water interface.
- Additional surface water leakage from SFWMD and LWDD canals resulting from PBC wellfield pumpage will be offset with alternative water supplies.
- Approach is consistent with SFWMD's Lower East Coast Regional Water Supply Plan.

Regional System Water Balance – Model Results

Additional Surface Water Leakage from SFWMD and LWDD Canals Due to PBCWUD Increase in Allocation under Maximum Monthly Pumping, Dry Conditions, and Average Conditions without Implementation of Alternative Water Supplies

Wellfield	Additional Surface Water Leakage (MGD)											
	2010			2015			2020			2025		
	Max	Dry	Ave	Max	Dry	Ave	Max	Dry	Ave	Max	Dry	Ave
2	2.40	2.40	0.00	9.46	9.45	0.00	12.05	12.00	0.00	15.10	15.04	1.98
3	8.82	8.63	0.00	7.28	7.12	0.00	9.93	9.71	0.00	12.87	12.59	0.00
9	1.27	0.97	0.00	0.00	0.00	0.00	2.26	0.00	0.00	4.93	3.74	1.10
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	12.50	12.00	0.00	16.75	16.58	0.00	24.23	21.71	0.00	32.90	31.37	3.08

Final Modeling Results After Proposing Alternative Water Supplies (Average Day Contribution)

Net Impact to the Regional Water System Under Average Day Pumping Conditions

Alternative Water Supply Component		2009		2014		2019		2024	
		Average Day Contribution (MGD)	Benefit to Regional System (MGD)[1]	Average Day Contribution (MGD)	Benefit to Regional System (MGD)[1]	Average Day Contribution (MGD)	Benefit to Regional System (MGD)[1]	Average Day Contribution (MGD)	Benefit to Regional System (MGD)[1]
ASR Wells	WTP No. 2 ASR Well (Future)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	WTP No. 3 ASR Well (Existing)	0.00		0.00		0.00		0.00	
	WTP No. 8 ASR Well (Future)	0.00		0.00		0.00		0.00	
	WTP No. 9 ASR Well (Existing)	0.00		0.00		0.00		0.00	
	Total ASR Contribution	0.00		0.00		0.00		0.00	
Wetlands	Wakodahatchee Wetlands (Existing)	0.50	1.35	0.50	1.35	0.50	1.35	0.50	1.35
	Winsberg Farms Wetlands (Future)	1.00		1.00		1.00		1.00	
	Total Wetland Contribution	1.50		1.50		1.50		1.50	
Brackish Water Blend or Reverse Osmosis Treated		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reclaimed Water		10.00	10.00	12.00	12.00	14.00	14.00	16.00	16.00
Total Alternative Water Supply (mgd)		11.50	11.35	13.50	13.35	15.50	15.35	17.50	17.35
Additional Raw Water Demand for Recharging ASR Wells (mgd)[2]			-1.14		-1.99		-5.12		-8.82
Estimated Additional Demand met from the Regional System Before Alternative Water Supply Projects (mgd)[3]			0.00		0.00		0.00		3.08
Net Positive Impact on Regional System (mgd)			10.21		11.36		10.23		5.45

Final Modeling Results After Proposing Alternative Water Supplies (Maximum Month Contribution)

Net Impact to the Regional Water System Under Maximum Month Pumping Conditions

Alternative Water Supply Component		2009		2014		2019		2024	
		Max Month Contribution (MGD)	Benefit to Regional System (MGD)	Max Month Contribution (MGD)	Benefit to Regional System (MGD)[1]	Max Month Contribution (MGD)	Benefit to Regional System (MGD)[1]	Max Month Contribution (MGD)	Benefit to Regional System (MGD)[1]
ASR Wells[1]	WTP No. 2 ASR Well (Future)	0.00	1.11	0.00	2.08	0.00	5.26	4.50	10.20
	WTP No. 3 ASR Well (Existing)	0.00		1.00		2.00		2.00	
	WTP No. 8 ASR Well (Future)	0.00		0.00		2.50		4.50	
	WTP No. 9 ASR Well (Existing)	2.00		2.50		4.50		4.50	
	Total ASR Contribution	2.00		3.50		9.00		15.50	
Wetlands[2]	Wakodahatchee Wetlands (Existing)	0.70	1.94	0.70	1.94	0.70	1.94	0.70	1.94
	Winsberg Farms Wetlands (Future)	1.50		1.50		1.50		1.50	
	Total Wetland Contribution	2.20		2.20		2.20		2.20	
Brackish Water Blend or Reverse Osmosis Treated		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reclaimed Water[2]		13.00	13.00	15.60	15.60	18.20	18.20	20.80	20.80
Total Alternative Water Supply (mgd)		17.20	16.05	21.30	19.62	29.40	25.40	38.50	32.94
Estimated Additional Demand met from the Regional System Before Alternative Water Supply Projects (mgd)[3]			12.47		16.73		24.21		32.86
Net Positive Impact on Regional System (mgd)			3.58		2.89		1.19		0.08

Facilities Expansion Schedule

Facility	Source of Water to be Utilized	Amount Paid Prior to FY 2004	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Total Estimated Construction Cost
9W ASR Well	Surficial and Floridan Aquifers	$ 1,600,000	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,800,000
Winsberg Farms Constructed Wetlands	Secondary Effluent	$ 2,000,000	$ 9,000,000	$ -	$ -	$ -	$1,000,000	$ 1,000,000	$ -	$13,000,000
WTP No. 3	Surficial and Floridan Aquifers	$ 9,000,000	$ 31,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$40,000,000
Reclaimed Water System Phase IV	Reclaimed Water	$ -	$ -	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 400,000	$ -	$ 2,400,000
WTP No. 2	Surficial and Floridan Aquifers	$ -	$ 4,000,000	$ 4,500,000	$ -	$ -	$ -	$15,000,000	$11,500,000	$35,000,000
8W ASR Well	Surficial and Floridan Aquifers	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,000,000
Reclaimed Water System Phase V	Reclaimed Water	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 300,000	$ 3,200,000
2W ASR Well	Surficial and Floridan Aquifers	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,000,000
WTP No. 8	Surficial and Floridan Aquifers	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$50,000,000

This schedule only includes alternate water resources, not sewer (as in the CIE). The source for funding of all these projects will be Water Utilities Department user fees and balances brought forward.

Required Alternative Water Supply Projects

Past Alternative Water Supply Projects		
3W ASR Well Constructed	$	1,200,000
Wakodahatchee Wetlands	$	7,000,000
Phases I, II, and III Reclaimed Water System	$	18,000,000
	$	26,200,000
2003 through 2008		
9W ASR Well Completed	$	1,800,000
Winsberg Farms Wetlands Constructed	$	10,000,000
	$	11,800,000
2008 through 2013		
Phase IV Expansion of Reclaimed Water System	$	2,400,000
	$	2,400,000
2013 through 2018		
8W ASR Well Constructed	$	2,000,000
Phase V Expansion of Reclaimed Water System	$	3,200,000
	$	5,200,000
2018 through 2023		
2W ASR Well Constructed	$	2,000,000
Phase VI Expansion of Reclaimed Water System	$	2,000,000
	$	4,000,000
Total Cost of Alternative Water Supply Projects	$	49,600,000

Net Benefit to CERP

- Impacts to the Regional System will be completely offset with alternative sources
- Additional water will be NOT needed from the Everglades ecosystem
- Additional water will be made available to CERP for Everglades restoration
- PBCWUD is not seeking CERP funding for the alternative water resources commitment

Draft Plan Amendment

- Revise 5-Year Schedule of Capital Improvements
- Prepare 10-Year Water Supply Facilities Work Plan
- Revise Conservation Element to include new water supply demand compatible with SFWMD's Regional Water Supply Plan.

Conclusion

- Coordinated effort involving all stakeholders.
- Furthered positive working relationship with the SFWMD.
- Effective use and consideration of the regional water supply plan.
- A step forward to secure water supply for all users. Example of sound planning efforts.
- Very productive experience. Fulfilled goals of a pilot project to facilitate the work of other local governments in the State.
- New requirements to link Water Supply and Land Use Planning first step towards true linkage of planning efforts and cooperation between planners and water managers.